

REMARKS

Reconsideration is respectfully requested in view of any changes to the claims and the remarks herein. Please contact the undersigned to conduct a telephone interview in accordance with MPEP 713.01 to resolve any remaining requirements and/or issues prior to sending another Office Action. Relevant portions of MPEP 713.01 are included on the signature page of this amendment.

Claims 101-106,108-123, 132/101,132/102,132/105, 133,134,135,145/135, 156,157,166,167,176 , and 178 have been rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The Examiner states:

The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification of the instant application only gives examples of laser ablation of chromium (page 7 of specification), gold (page 12 of specification), silver film on glass (page 13 of specification), SiO₂ (glass) (page 15 of specification), cornea (page 16 of specification). There is no disclosure of the material genus being "non- biological" as claimed in claims 101-106,108 -123, 132/101,132/102,132/105, of the material genus being "non-organic" as claimed in claims 133, 134,156,166,176, of the material genus being "non-organic" as claimed in claims 135,145/135,157,167, and 178. Applicant cannot successfully argue that Applicant by having examples of the genus is entitled to claim the entire genus.

Applicants respectfully disagree. A cornea is organic and glass, silver and chromium are non-organic and non-biological. Thus applicants have disclosed organic, non-organic, biological and non-biological materials. Moreover, applicants respectfully believe that the Examiner's statement "There is no disclosure of the material genus being "non- biological" as claimed in claims 101-106,108 -123, 132/101,132/102,132/105, of the material genus being "non-organic" as claimed in claims 133, 134,156,166,176, of the material genus being "non-organic" as claimed in claims 135,145/135,157,167, and 178" is incorrect since applicants' specification disclose biological and non-biological species and generically describe their invention being applicable to any material. The genus material is composed of a biological genus

and a non-biological genus. Applicants respectfully disagree with the Examiner's statement "Applicant cannot successfully argue that Applicant by having examples of the genus is entitled to claim the entire genus." The Examiner has not made out a *prima facie* case for lack of enablement. The Examiner has given no reason for why a person of ordinary skill in the art cannot practice applicants' claimed invention without undue experimentation. In view of applicants' remarks the Examiner is respectfully requested to withdraw the rejection of claims 101-106,108-123, 132/101,132/102,132/105, 133,134,135,145/135, 156,157,166,167,176 , and 178 under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement.

Claims 151-153 have been rejected under 35 U.S.C. 102(b) as being anticipated by Mourou in U.S. Patent No. 5,656,186. The Examiner states "Mourou directs the laser pulses at a point at or beneath the surface of the material." Claims 151-153 have been amended to recite "directing the pulse at a point above the surface of the material." In view thereof applicants respectfully request withdrawal of the rejection of Claims 151-153 under 35 U.S.C. 102(b) as being anticipated by Mourou in U.S. Patent No. 5,656,186.

In response to the Examiner's inquiry each claim presented for examination as commonly owned at the time the invention was made.

Claims 101-150, and 154-184 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Mourou et al. in U.S. Patent No. 5,656,186 in view of Portney et al. in U.S. Patent No. 5,053,171 or Bennin et al. in U.S. Patent No. 5,160,823. The Examiner states:

Mourou et al. discloses a method for laser induced breakdown of a non-biological material (e.g. gold) material being characterized by a relationship of fluence breakdown at which breakdown occurs versus laser pulse width that exhibits a distinct change of slope at a characteristic laser pulse width, said method comprising the steps of: generating at least one laser pulse which has a pulse width equal to or less than said characteristic laser pulse width. Mourou et al. does not

disclose directing or focusing the laser beam to a point above the surface of the material but does disclose that the optics can include a mask (e.g. see figure 6A). Portney teaches laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece. Alternatively Bennin et al. teaches laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece.

Applicant agrees that "Mourou et al. does not disclose directing or focusing the laser beam to a point above the surface of the material. " But applicants disagree that "Portney teaches laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece. Alternatively Bennin et al. teaches laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece" as asserted by the Examiner.

Applicants respectfully disagree with the Examiner's statement that "It would have been obvious to adapt Mourou et al. in view of Portney et al. or Bennin et al. to focus the laser beam above the workpiece so that an image of a mask can be ablated onto the workpiece." The Examiner has not made out a *prima facie* case of obviousness sine the Examiner has not identified where Mourou et al. , Portney et al. or Bennin et al. teach, suggest, provide motivation for "directing or focusing the laser beam to a point above the surface of the material." The Examiner also has not provided a reason for why a person of skill in the art would conceive applicants' invention based on the teaching of Mourou et al., Portney et al. or Bennin et al. and the knowledge of a person of ordinary skill in the art prior to applicants' earliest filing date. In view thereof applicants respectfully request the Examiner to withdraw the rejection of Claims 101-150, and 154-184 under 35 U.S.C. 103(a) as being unpatentable over Mourou et al. in U.S. Patent No. 5,656,186 in view of Portney et al. in U.S. Patent No. 5,053,171 or Bennin et al. in U.S. Patent No. 5,160,823.

In the Summary of the Invention at Col. 1, lines 50 to 61 Mourou et al. teach:

In one aspect the invention provides a **method for laser induced**

breakdown of a material with a pulsed laser beam where the material is characterized by a relationship of fluence breakdown threshold (F_{th}) versus laser beam pulse width (T) that exhibits an abrupt, rapid, and distinct change or at least a clearly detectable and distinct change in slope at a predetermined laser pulse width value. **The method comprises generating a beam of laser pulses in which each pulse has a pulse width equal to or less than the predetermined laser pulse width value. The beam is focused to a point at or beneath the surface of a material where laser induced breakdown is desired.** (Emphasis added.)

Thus Mourou et al. teaches

1. laser induced breakdown of a material with a pulsed laser beam;
2. the material is characterized by a relationship of fluence breakdown threshold (F_{th}) versus laser beam pulse width (T) that exhibits an abrupt, rapid, and distinct change or at least a clearly detectable and distinct change in slope at a **predetermined laser pulse width value**;
3. each pulse has a pulse width equal to or less than the **predetermined laser pulse width value**.

Mourou et al. further teaches at Col. 5, lines 25 to 54:

In experimental conditions with wavelength of 800 nm and 200 fs pulses on gold (FIG. 3), the absorption depth is 275 Å with a diffusion length of 50 Å. In the case of nanosecond pulses the diffusion length, which is on the order of 10 μm (micron) in diameter, is much longer than the absorption depth, resulting in thermal diffusion being the limiting factor in feature size resolution. Empirical evidence for the existence of these two regimes is as exhibited in FIG. 3. Here both experimental and theoretical ablation thresholds are plotted as a function of pulse width. An arrow [predetermined laser pulse width value referred to in the quote above from Col. 1, lines 50 to 61] at approximately 7 picoseconds pulse width (designated herein as T or $\tau_{\text{sub}p}$) delineates the point (or region closely bounding that point) at which the thermal diffusion length ($l_{\text{sub}th}$) is equal to the absorption depth ($1/a$). It is clear that for a smaller size spot a shorter (smaller) pulse is necessary. For spot size on the order of 1000 Å or less, pulse width on the order of 100 femtoseconds or less will

be needed. It is clear from the figure that this is the point [i.e the predetermined laser pulse width value] at which the ablation threshold transitions from a slowly varying or nearly constant value as a function of pulse width to one that is dramatically dependent on pulse time. This result is surprising. It has been demonstrated that the electron thermalization time for laser deposited energy in gold is on the order of, or less than, 500 fs and the electron-lattice interaction time is 1 ps. The consequences of this for ultrafast laser pulses is that the energy is contained within the beam spot. In fact for energies at or near the threshold for ablation, the spatial profile of the laser beam will determine the size and shape of the region being ablated (FIGS. 4 and 5).

Fig. 3 of Mourou et al. is below. The teaching of Mourou et al. is limited to the regime where there is no heating of the material but laser induced breakdown of the material.

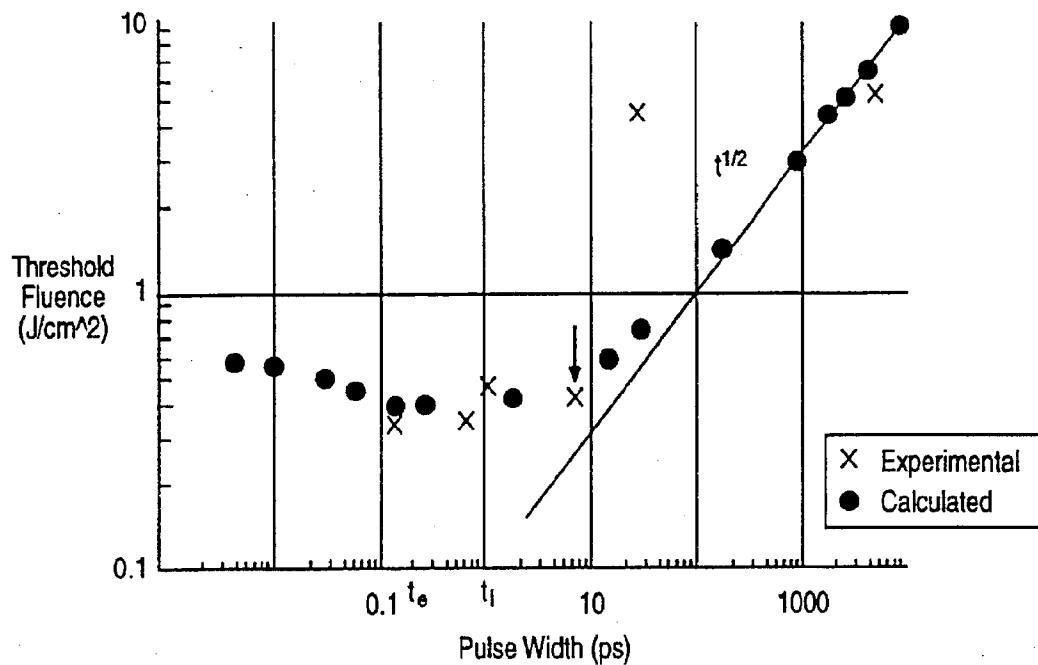
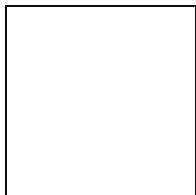


FIG. 3

A person of ordinary skill in the art from the teaching of Mourou et al. is led to believe by the explicit teaching "The beam is focused to a point at or beneath the surface of a material where laser induced breakdown is desired." (Col. 1, lines 50 to 61 Mourou et al.) that no material will be removed by the non-thermal method taught by Mourou et al. that is not at the focus of the laser beam.

The following is a marked up version of Mourou et al. Fig. 3:



Portney et al. teaches laser ablation by heating. Portney et al. teaches Col. 1, line 65 to Col. 2, line 7.

Finally, a laser beam is masked and focused generally into the form of a hollow cone whose tip is the focal point of the beam. By exposing the workpiece to the beam on one side of the focal point and then on the other, two bevel cuts are made along the perimeter of the upper and lower surfaces, respectively, of the workpiece. When combined with a vertical section of the side of the workpiece, these bevel cuts form an approximation of a rounded edge which is further softened by the slight melting of the workpiece material produced by the heat generated by the laser during cutting.

Thus Portney et al. is directed to the portion of Mourou Fig. 3 that is not in the regime of the Mourou et al invention, i.e. laser pulse widths too short for heating of the material. Thus a person of ordinary skill in the art would not be motivated by the teaching of Portney et al. to change the location of the focus of the laser beam (i.e., Mourou et al. states “The beam is focused to a point at or beneath the surface of a material where laser induced breakdown is desired.”)

Bennin et al. teaches at Col. 4, lines 59-63:

Synchronously, work piece surface 18 moves with the **mask 15**, in the opposite direction, as indicated in FIG. 2, allowing the identically patterned, but magnified zone of **object image 25** to be ablated from the work piece surface 18.

Bennin et al. teaches at Col. 4, lines 29-38:

The pattern image on mask 15 at the zone where beam 11 strikes the mask is guided into third turning mirror 16 which turns the projected image 90° into focusing lens 17, mounted on vertical focusing lens Z axis stage 22, which moves perpendicular to the

horizontal mask W axis stage 21. Focusing lens 17 inverts, magnifies and projects the image onto the work piece surface 18,

Thus Bennin et al. teaches focusing mask 15 by lens 17 onto surface 18 as image 25. This is the same teaching as Mourou et al. (i.e Mourou et al. states “The beam is focused to a point at or beneath the surface of a material where laser induced breakdown is desired.”) Thus a person of ordinary skill in the art would not be motivated by the teaching of Bennin et al to focus the laser beam above the surface from which material is to be removed. The Examiner has provided no specific argument for why claim 101, or any of the claims should be obvious over Mourou et al. in U.S. Patent No. 5,656,186 in view of Portney et al. in U.S. Patent No. 5,053,171 or Bennin et al.

Thus the Examiner’s statements:

- 1) “Portney teaches laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece.”
- 2) “Alternatively Bennin et al. teaches laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece.”

are not supported by the teaching of Portney which as stated above is directed to laser heating, whereas Mourou teach that laser heating is not to be used, and Benin which as stated above is directed to focusing at the surface, which is what Mourou teaches.

Regarding claim 102, the Examiner states” Mourou et al. discloses that the material is a metal, the pulse width is 10 to 10,000 femtoseconds and the pulse has an energy of 1 nanojoule to 1 microjoule (see claim 2 of Mourou et al.).” The Examiner does not point out where this teaching is in Mourou et al. and thus has not made a case of *prima facie* case of obviousness of claim 102.

Regarding claim 103 the Examiner states “Mourou et al. discloses that the spot size is

varied within a range of 1 to 100 microns by changing the f-number of the laser beam.” The Examiner does not point out where this teaching is in Mourou et al. and thus has not made a case of prima facie case of obviousness of claim 103.

Regarding claim 104 the Examiner states “Mourou et al. discloses the spot size is varied within a range of 1 to 100 microns by varying the target position. “The Examiner does not point out where this teaching is in Mourou et al. and thus has not made a case of prima facie case of obviousness of claim 104.

Regarding claim 105 the Examiner states “Mourou et al. discloses that the material is transparent to radiation emitted by the laser and the pulse width is 10 to 10,000 femtoseconds, the pulse has an energy of 10 nanojoules to 1 millijoule.” The Examiner does not point out where this teaching is in Mourou et al. and thus has not made a case of prima facie case of obviousness of claim 105.

Regarding claim 106 the Examiner states “the step of focusing directs the focus of the laser beam to a point above the surface.” The Examiner does not point out where this teaching is in Mourou et al. and thus has not made a case of prima facie case of obviousness of claim 106.

Claims 102-106 depend from claim 101 which as shown above is not obvious in view of the cited references.

The Examiner states “Regarding claim 107, Mourou et al. discloses a method for laser induced breakdown (LIB) of a material with a pulsed laser beam, the material being characterized by a relationship of fluence breakdown threshold versus laser pulse width that exhibits a rapid and distinct change in slope at a predetermined laser pulse width that exhibits a rapid and distinct change in slope at a predetermined laser pulse width where the onset of plasma breakdown occurs, said method comprising the steps of: a) generating a beam of one or more laser pulses in which each pulse has a pulse width equal to or less than said predetermined laser pulse width obtained by

determining the ablation (LIB) threshold of the material as a function of pulse width and by determining where the ablation threshold function is no longer proportional to the square root of the pulse width.” The Examiner does not point out where this teaching is in Mourou et al. and thus has not made prima facie case of obviousness of claim 107.

The Examiner states “Mourou et al. does not focus the laser beam to a point above the surface of the material so that the ablation threshold of said laser beam is substantially at said surface.” The Examiner further states “Portney teaches laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece. Alternatively Bennin et al. teaches laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece”. The Examiner has pointed to no teaching in Mourou et al., Portney et al. or Bennin et al. nor provided any argument as to why a person of ordinary skill in the art would conceive of what the Examiner asserts to support this assertion. The Examiner further states “It would have been obvious to adapt Mourou et al. in view of 'Portney et al. or Bennin et al. to focus the laser beam above the workpiece so that an image of a mask can be ablated onto the workpiece.” The Examiner has pointed to no teaching in Mourou et al., Portney et al. or Bennin et al. to support this assertion. The Examiner also has not provided a reason for why a person of skill in the art would conceive applicants invention based on the teaching of Mourou et al. , Portney et al. or Bennin et al. and the knowledge of a person of ordinary skill in the art prior to applicant's earliest filing date. Therefore, the Examiner has not made out a prima facie case of obviousness of claim 102 in view of Mourou et al., Portney et al. or Bennin et al. The Examiner has provided no specific argument for why claims 103 to 107 should be obvious over Mourou et al. in U.S. Patent No. 5,656,186 in view of Portney et al. in U.S. Patent No. 5,053,171 or Bennin et al. Therefore, the Examiner has not made out a prima facie case of obviousness of claims 102 to 107 in view of Mourou et al., Portney et al. or Bennin et al.

Regarding claim 108 the Examiner states:

Mourou et al. discloses that laser pulse has an energy in the range of 10 nanojoules to 1 millijoule (see claim 8 of Mourou et al). Regarding claim 109, Mourou et al. discloses that the laser pulse has a fluence in a range of 100 millijoules per square centimeter to 100 joules per square centimeter (see claim 9 of Mourou et al).

Claim 108 depends from claim 101. As noted above the Examiner has not made out a prima facie case of obviousness of claim 101. Therefore the Examiner has not made out a prima facie case of obviousness of claim 108.

The Examiner has provided no specific argument for why claim 109 should be obvious over Mourou et al. in U.S. Patent No. 5,656,186 in view of Portney et al. in U.S. Patent No. 5,053,171 or Bennin et al. Therefore the Examiner has not made out a prima facie case of obviousness of claim 109.

Regarding claim 110 the Examiner states “Mourou et al. has a laser pulse that defines a spot in or on the material and the LIB causes ablation of an area having a size smaller than the area of the spot (see claim 9 of Mourou et al).” Claim 110 depends from claim 101. As noted above the Examiner has not made out a prima facie case of obviousness of claim 101. Therefore the Examiner has not made out a prima facie case of obviousness of claim 110.

Regarding claim 111 the Examiner stats “Mourou et al. uses a laser pulse with a wavelength in a range of 200 nm to 2 microns.” Claim 111 depends from claim 101. As noted above the Examiner has not made out a prima facie case of obviousness of claim 101. Therefore the Examiner has not made out a prima facie case of obviousness of claim 111.

Regarding claim 112 the Examiner states” Mourou et al. discloses a pulse width in a range of a few picoseconds to femtoseconds (see claim 12 of Mourou et al.). “Claim

112 depends from claim 101. As noted above the Examiner has not made out a prima facie case of obviousness of claim 101. Therefore the Examiner has not made out a prima facie case of obviousness of claim 112.

Regarding claims 113, 114, 117 the Examiner states “Mourou et al. discloses that the breakdown includes changes caused by one or more of ionization, free electron multiplication, dielectric breakdown, plasma formation, and vaporization (see claim 13 of Mourou et al.).” Claims 113, 114 and 117 each depends from claim 101. As noted above the Examiner has not made out a prima facie case of obviousness of claim 101. Therefore the Examiner has not made out a prima facie case of obviousness of claim 113, 114 and 117.

The Examiner states “Regarding claim 115, Mourou et al. discloses that the breakdown includes disintegration (see claim 15 of Mourou et al.).” Claim 115 depends from claim 101. As noted above the Examiner has not made out a prima facie case of obviousness of claim 101. Therefore the Examiner has not made out a prima facie case of obviousness of claim 115.

The Examiner states “Regarding claim 116, see claim 16 of Mourou et al. Regarding claim 118, see claim 18 of Mourou et al.” Claims 116 depends from claim 101. As noted above the Examiner has not made out a prima facie case of obviousness of claim 101. Therefore the Examiner has not made out a prima facie case of obviousness of claim 116 or claim 118.

The Examiner has provided no specific argument for why claims 117 or 118 should be obvious over Mourou et al. in U.S. Patent No. 5,656,186 in view of Portney et al. in U.S. Patent No. 5,053,171 or Bennin et al. Therefore the Examiner has not made out a prima facie case of obviousness of claims 117 or 118.

The Examiner states:

Regarding claim 119, see claim 19 of Mourou et al. Regarding claim

120, see claim 20 of Mourou et al. Regarding claim 121, see claim 21 of Mourou et al. Regarding claim 122, see Mourou et al. discloses this in claim 22. Regarding claim 123, Mourou et al. discloses this in claim 23. Regarding claim 124, Mourou et al. meets all of the limitations in paragraph a in paragraph a of claim 24. Mourou et al. does not disclose directing said one or more pulses of said beam to a point above the surface of the material.

In the passage the Examiner states “Mourou et al. does not disclose directing said one or more pulses of said beam to a point above the surface of the material.” The Examiner further states “Portney et al. teach laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece.” The Examiner has not made a case for prima facie obviousness since the Examiner has not identified where Portney teaches this. The Examiner further states “Alternatively Bennin et al. teaches laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece.” The Examiner has not made a case for prima facie obviousness since the Examiner has not identified where Bennin teaches this. The Examiner further states “It would have been obvious to adapt Mourou et al. in view of Portney et al. or Bennin et al. to focus the laser beam above the workpiece so that an image of a mask can be ablated onto the workpiece.” This is merely a conclusory statement without any articulated reasoning with some rational underpinning to support the Examiners conclusion of obviousness and therefore does not make out a prima facie case of obviousness of claims 119-121.

The Examiner states: “Regarding claims 125 and 126, see claims 25 and 26 of Mourou et al. Please note that Portney et al. disclose in column 5, lines 13-14” a mask may be scanned rather than being exposed all at once. Alternatively Bennin et al. disclose scanning during laser ablation.” Claims 125 and 126 depend from claim 124. Claim 125 recites “scanning … in a transverse direction” and 125 recites “scanning … in a longitudinal direction.” The Examiner des not identify where this is found in Portney et al. This is merely a conclusory statement without any articulated reasoning with some rational underpinning to support the Examiners conclusion of

obviousness and therefore does not make out a prima facie case of obviousness of claims.

The Examiner provides no specific reason for why claims 137-132 are obvious.

Therefore, the Examiner has not made out a prima facie case of obviousness of these claims.

The Examiner states “Regarding claim 133, Mourou et al. discloses all of the limitations of claim 133 in claim 33 of Mourou et al. except focusing or directing the laser beam above the surface of the material.” The Examiner further states “Portney teaches laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece.” Applicants respectfully disagree that Portney teaches “focusing the laser beam above the surface of the workpiece.” Since the Examiner has not identified where Portney teaches this, the Examiner has not made out a prima facie case of obviousness. The Examiner further states “Alternatively Bennin et al. teaches laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece.” Since the Examiner has not identified where Bennin teaches this, the Examiner has not made out a prima facie case of obviousness. The Examiner further states “It would have been obvious to adapt Mourou et al. in view of Portney et al. or Bennin et al. to focus the laser beam above the workpiece so that an image of a mask can be ablated onto the workpiece.” The Examiner does not identify where this is found in Portney et al. or Bennin et al. This is merely a conclusory statement without any articulated reasoning with some rational underpinning to support the Examiners conclusion of obviousness and therefore, does not make out a prima facie case of obviousness of claims.

The Examiner state “ Regarding claim 134, see claim 34 of Mourou et al. Regarding claim 135, Mourou et al. discloses all of the limitations of claim 135 in claim 35 except directing (focusing) the pulse to a point above the surface of the material. “ The Examiner further states “Portney teaches laser ablation while focusing the laser beam

above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece.” Since the Examiner has not identified where Portney teaches this, the Examiner has not made out a prima facie case of obviousness. The Examiner further states “Alternatively Bennin et al. teaches laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece.” Since the Examiner has not identified where Bennin teaches this, the Examiner has not made out a prima facie case of obviousness. The Examiner further states “It would have been obvious to adapt Mourou et al. in view of Portney et al. or Bennin et al. to focus the laser beam above the workpiece so that an image of a mask can be ablated onto the workpiece.” This is merely a conclusory statement without any articulated reasoning with some rational underpinning to support the Examiners conclusion of obviousness and therefore, does not make out a prima facie case of obviousness of claims.

The Examiner states “Regarding claim 136, Mourou et al. discloses all of the limitations of claim 136 in claim 36 of Mourou et al. except directing the pulse to a point above the surface of the material.” The Examiner further states “Portney et al. teach laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece.” Since the Examiner has not identified where Portney teaches this, the Examiner has not made out a prima facie case of obviousness. The Examiner further states “Alternatively Bennin et al. teach laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece.” Since the Examiner has not identified where Bennin teaches this, the Examiner has not made out a prima facie case of obviousness. The Examiner further states “It would have been obvious to adapt Mourou et al. in view of Portney et al. or Bennin et al. to focus the laser beam above the workpiece so that an image of a mask can be ablated onto the workpiece.” This is merely a conclusory statement without any articulated reasoning with some rational underpinning to support the Examiners conclusion of obviousness and therefore, does not make out a prima facie case of obviousness of claims.

The Examiner states “Regarding claim 137, Mourou et al. discloses all of the limitations of claim 137 in claim 37 of Mourou et al. except directing the pulse to a point above the surface of the material. “ The Examiner further states “”Portney et al. teach laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece.” Since the Examiner has not identified where Portney teaches this, the Examiner has not made out a *prima facie* case of obviousness. The Examiner further states “Alternatively Bennin et al. teach laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece.” Since the Examiner has not identified where Bennin teaches this, the Examiner has not made out a *prima facie* case of obviousness. The Examiner further states “It would have been obvious to adapt Mourou et al. in view of Portney et al. or Bennin et al. to focus the laser beam above the workpiece so that an image of a mask can be ablated onto the workpiece.” This is merely a conclusory statement without any articulated reasoning with some rational underpinning to support the Examiners conclusion of obviousness and therefore, does not make out a *prima facie* case of obviousness of claims.

The Examiner states” Regarding claim 146, Mourou et al. discloses all of the limitations of claim 146 except directing the pulse to appoint above the surface of the material.“ The Examiner further states “Portney et al. teach laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece.” Since the Examiner has not identified where Portney teaches this, the Examiner has not made out a *prima facie* case of obviousness. The Examiner further states “ Alternatively Bennin et al. teach laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece.” Since the Examiner has not identified where Bennin teaches this, the Examiner has not made out a *prima facie* case of obviousness. The Examiner further states “It would have been obvious to adapt Mourou et al. in view of Portney et al. or Bennin et al. to focus

the laser beam above the workpiece so that an image of a mask can be ablated onto the workpiece.” This is merely a conclusory statement without any articulated reasoning with some rational underpinning to support the Examiners conclusion of obviousness and therefore, does not make out a *prima facie* case of obviousness of claims.

The Examiner states “Regarding claim 147, Mourou et al. discloses obtaining the beam by chirped pulse amplification (CPA) means comprising means for generating a short optical pulse having a predetermined duration; means for stretching such optical pulse in time; means for amplifying such optical pulse in time; means for amplifying such stretched optical pulse including solid state amplifying media; and means for recompressing such amplified pulse to its original duration.” The Examiner does not point out where this teaching is in Mourou et al. and thus has not made a *prima facie* case of obviousness of this claim. Claim 147 depends from claim 146. Since the Examiner has not made a *prima facie* case of obviousness of claim 146 the Examiner has not made a *prima facie* case of obviousness of claim 147.

The Examiner states “Regarding claim 148, Mourou et al. discloses all of the limitations of claim 148 except directing the laser pulse to a point above the surface of the material.” The Examiner further states “Portney teaches laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece.” Since the Examiner has not identified where Portney teaches this, the Examiner has not made out a *prima facie* case of obviousness. The Examiner further states “Alternatively Bennin et al. teaches laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece.” Since the Examiner has not identified where Bennin teaches this, the Examiner has not made out a *prima facie* case of obviousness. The Examiner further states “It would have been obvious to adapt Mourou et al. in view of Portney et al. or Bennin et al. to focus the laser beam above the workpiece so that an image of a mask can be ablated onto the workpiece.” This is merely a conclusory statement without any articulated

reasoning with some rational underpinning to support the Examiners conclusion of obviousness and therefore, does not make out a prima facie case of obviousness of claims.

The Examiner state “Regarding claim 149, Mourou et al. discloses obtaining the beam by chirped pulse amplification (CPA) means comprising means for generating a short optical pulse having a predetermined duration; means for stretching such optical pulse in time; means for amplifying such optical pulse in time; means for amplifying such stretched optical pulse including solid state amplifying media; and means for recompressing such amplified pulse to its original duration.” The Examiner does not point out where this teaching is in Mourou et al. and thus has not made a case of prima facie case of obviousness of this claim. Claim 149 depends from claim 148. Since the Examiner has not made a prima facie case of obviousness of claim 148 the Examiner has not made a prima facie case of obviousness of claim 149.

The Examiner states “Regarding claim 150, Mourou et al. discloses all of the limitations of claim 150 except directing the laser pulse to a point above the surface of the material.” The Examiner further states “ Portney teaches laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece.” Since the Examiner has not identified where Portney teaches this, the Examiner has not made out a prima facie case of obviousness. The Examiner further states “Alternatively Bennin et al. teaches laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece. Since the Examiner has not identified where Bennin teaches this, the Examiner has not made out a prima facie case of obviousness. The Examiner further states “It would have been obvious to adapt Mourou et al. in view of Portney et al. or Bennin et al. to focus the laser beam above the workpiece so that an image of a mask can be ablated onto the workpiece.” This is merely a conclusory statement without any articulated reasoning with some rational underpinning to support the Examiners conclusion of obviousness and therefore, does not make out a prima facie case of obviousness of

claims.

The Examiner states “ Regarding claim 154, Mourou et al. discloses all of the limitations of claim 154 except directing the laser pulse to a point above the surface of the material.” The Examiner further states “Portney teaches laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece.” Since the Examiner has not identified where Portney teaches this, the Examiner has not made out a prima facie case of obviousness. The Examiner further states “Alternatively Bennin et al. teaches laser ablation while focusing the laser beam above the surface of the workpiece so that an image of the mask is ablated onto the surface of the workpiece. Since the Examiner has not identified where Bennin teaches this, the Examiner has not made out a prima facie case of obviousness. The Examiner further states “It would have been obvious to adapt Mourou et al. in view of Portney et al. or Bennin et al. to focus the laser beam above the workpiece so that an image of a mask can be ablated onto the workpiece. “This is merely a conclusory statement without any articulated reasoning with some rational underpinning to support the Examiners conclusion of obviousness and therefore, does not make out a prima facie case of obviousness of claims. The Examiner further states “Adjusting the intensity of the beam according to the material being ablated is an easily predictable adjustment of the apparatus and well within the level of ordinary skill in the art.” This comment appears to be misplaced since claim 154 has no recitation of “Adjusting the intensity of the beam according to the material being ablated.” Not withstanding applicants respectfully disagree that “Adjusting the intensity of the beam according to the material being ablated is an easily predictable adjustment of the apparatus and well within the level of ordinary skill in the art.” The Examiner provide no documentary evidence to support this assertion. This is merely a conclusory statement without any articulated reasoning with some rational underpinning to support the Examiners conclusion of obviousness and therefore, does not make out a prima facie case of obviousness of claims.

The Examiner has provide no specific comments in regards to claims 155 to 184

therefore the Examiner has not made out a case of prima facie obviousness of these claims over Mourou et al. in U.S. Patent No. 5,656,186 in view of Portney et al. in U.S. Patent No. 5,053,171 or Bennin et al.

In view of the remarks herein the Examiner is respectfully requested to withdraw the rejection of Claims 101-150, and 154-184 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Mourou et al. in U.S. Patent No. 5,656,186 in view of Portney et al. in U.S. Patent No. 5,053,171 or Bennin et al. in U.S. Patent No. 5,160,823.

The Examiner states “The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.” The Examiner further states “Sakuma in Japan Patent No. 3-66,488 discloses drilling with high accuracy by having the laser beam focused above the workpiece. Since the Examiner has not identified where Sakuma teaches this, the Examiner has not made out a prima facie case of obviousness in view of it. The Examiner further states “Ranalli in U.S. Patent No. 5,662,762 discloses laser ablation while using a laser beam focused above the workpiece surface.” Since the Examiner has not identified where Ranalli teaches this, the Examiner has not made out a prima facie case of obviousness. The Examiner further states “Dupuy in France Patent No. 2,576,836 discloses cutting a groove in thermoplastic while using a laser beam focused above the workpiece surface (see figure 4).” This reference is not in English and the Examiner is reading applicants' invention into this Fig. 4 without justifying it. Therefore, the Examiner has not made out a prima facie case of obviousness in view of Dupuy.

In view of the changes to the claims and the remarks herein, the Examiner is respectfully requested to reconsider the above-identified application. If the Examiner wishes to discuss the application further, or if additional information would be required, the undersigned will cooperate fully to assist in the prosecution of this application. Please charge any fee necessary to enter this paper and any previous paper to deposit account 09-0468.

If the above-identified Examiner's Action is a final Action, and if the above-identified application will be abandoned without further action by applicants, applicants file a Notice of Appeal to the Board of Appeals and Interferences appealing the final rejection of the claims in the above-identified Examiner's Action. Please charge deposit account 09-0468 any fee necessary to enter such Notice of Appeal.

In the event that this amendment does not result in allowance of all such claims, the undersigned attorney respectfully requests a telephone interview at the Examiner's earliest convenience.

MPEP 713.01 states in part as follows:

Where the response to a first complete action includes a request for an interview or a telephone consultation to be initiated by the examiner, ... the examiner, as soon as he or she has considered the effect of the response, should grant such request if it appears that the interview or consultation would result in expediting the case to a final action.

Respectfully submitted,

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